## IN THE CLAIMS

	Please revise the claims as follows:
	129. (New) A method of making mesoporous silica materials, comprising the steps
	of  (a) combining a silica precursor with an aqueous solvent, an acid and a
	sympostant having an ammonium cation into a silica precursor solution.
	(b) templating the silica precursor with the surfactant and obtaining the
,	mesoporous material from the templated silica precursor,
1	(c) forming said silica precursor solution into a preform; and
. (	(d) rapidly evaporating said aqueous solvent from said preform for
	obtaining the mesoporous material, wherein the improvement comprises:
	(i) providing said aqueous solvent in an amount resulting in
	complete hydrolysis and providing said acid in an amount maintaining a hydrolyzed
	precursor and avoiding gelation or precipitation; and
	(ii) providing said surfactant and said silica precursor in a more
	ratio that is above a lower mole ratio that produces a non-porous silica phase and below an
	upper mole ratio that produces a lamellar phase.
	130. (New) The method as recited in claim 129, wherein said lower mole ratio is about 0.05.
	131. (New) The method as recited in claim 129, wherein said upper mole ratio is about 0.3.
	132. (New) The method as recited in claim 129, wherein said acid is added in an amount resulting in a pH of said silica precursor solution of from about 1 to about 4.
	133. (New) The method as recited in claim 132, wherein said pH is about 2.
	134. (New) The method as recited in claim 129, wherein the step of forming
	includes diluting with an alcohol.

(New) The method as recited in claim 134, wherein said alcohol is ethanol. DO. NO. 1941-70 PAGE 2 of 15

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	136. (New) The method as recited in claim 129, wherein said aqueous solvent, said
acid	and said surfactant are premixed before combining with said silica precursor.

137. (New) The method as recited in claim 129, wherein said mesoporous materials
137. (New) The method as recited in claim, 122, 122, 122, 122, 122, 122, 122, 12
are in a geometric form selected from the group consisting extremal
138. (New) The method as recited in claim 129, wherein said forming is spin-
casting.
139. (New) The method as recited in claim 129, wherein said forming is spraying.
140. (New) The method as recited in claim 129, further comprising adding a pre- polymer or a polymer to said silica precursor solution making a pituitous mixture.
141. (New) The method as recited in claim 129, wherein said forming is drawing.
142. (New) The method as recited in claim 129, wherein said forming is
squeegeeing.
143. (New) The method as recited in claim 129, further comprising the step of adding a metal compound to the silica precursor solution.
144. (New) The method as recited in claim 143, wherein said metal compound is selected from the group consisting of metal halide, metal nitrate, and combinations thereof.
145. (New) The method as recited in claim 144, wherein said metal halide is a metal chloride.
The method as recited in claim 144, wherein said metal is selected from

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the group of aluminum, iron and combinations thereof.

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147. (N	ew) The metho	od as recited in cla	im 129, whereir	n said silica	precursor is an
alkoxide silica	precursor or a to	etrachlorosilane.	,		
					calivant
148. (N	lew) The meth	od as recited in cla	<u>im 129, wherei</u>	n said aque	bus sorvent
amount is char	acterized by a r	atio of said aqueou	is solvent to sai	d silica pred	sursor of about 7.
				hioa biaa ::	amount is
<u>149. (</u>	New) The meth	od as recited in cl	nm 129, where	hout () ]	difficulty v=
characterized l	oy a ratio of said	d acid to said silica	i precursor of a	Done O.I.	
	No. The met	nod as recited in cl	aim 129, furthe	r comprisin	g adding a
		ecursor solution.			
swelling agen	to the sinca pr	<u> </u>	•		
151(	New) The met	hod as recited in c	laim 150, where	<u>ein said swe</u>	lling agent is
1,3,5-trimethy		•			
			•		
<u> 152.</u>	(New) The me	thod as recited in c	laim 129, furth	er comprisi	ng the step of
calcining the	mesoporous ma	aterial.			
				film comp	rising the steps of
<u>153.</u>	(New) A meth	od of making a me	sopoious sinca	eous solven	t, an acid and a
	(a) combin	ing a sinca precur	sol with an age	solution,	
surfactant ha	ving an ammor	nium cation into a ting the silica prec	ursor with the s	urfactant ar	d obtaining the
mesoporous	material from t	he templated silica g said silica precu	rsor into a prefe	rm; and	
	(c) formin	evaporating said	aqueous solven	t from said	preform for
 والعرب المراجع الا	(d) Tapidiy	naterial, wherein t	he improvemen	t comprises	<u>:</u>
obtaining u	(i)	said silica precur	sor is tetraethox	(vsilane:	
	(ii)	providing said ag	ueous solvent i	n a supersto	oichiometric amount
ibiyora bae	ng said acid in	an amount maintai	ning a hydrolyz	zed precurso	or and avoiding
	precipitation;				
	(66)	providing said st	irfactant and sa	<u>id silica pre</u>	cursor in a mole
ratio that is	above a lower	mole ratio that pro	duces a non-po	rous silica j	phase and below and
upper mole	ratio that prod	uces a lamellar ph	ase; and		
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	(iv) said forming includes diluting with an alcohol.
154. polymer or a	(New) The method as recited in claim 153, further comprising adding a pre- polymer to said silica precursor solution making a pituitous mixture.
155	(New) The method as recited in claim 153, wherein said rapidly evaporating is
by spin-casti	ng.
<u>156.</u>	(New) A method of making a mesoporous film on a substrate, the method
comprising t	the steps of:  (a) combining a silica precursor with an aqueous solvent, an acid catalyst
and an amm	onjum cationic surfactant into a precursor solution;
	(b) dispensing said precursor solution onto the substrate:
	(c) forming a film by evaporation of the solvent in less than 5 minutes; and
	(d) heating the film on the substrate to a temperature sufficient to
decompose	the surfactant, thereby producing a mesoporous film on the substrate.
ratio that is	(New) The method of claim 156 wherein the precursor solution is a silica olution and wherein the surfactant and the silica precursor solution are in a mole above a lower mole ratio that produces a non-mesoporous silica phase and upper mole ratio that produces a lamellar phase.
158.	(New) The process of claim 156, wherein the film exhibits an index of
	between 1.16 and that of silica.
solvent ar	(New) A process to form mesostructured films, comprising:  (a) preparing a precursor sol containing a soluble source of silica, an olvent, an ammonium cationic surfactant and an acid catalyst; and  (b) depositing the precursor sol on a substrate wherein evaporation of and water in less than 5 minutes causes the formation of said mesostructured films ostrate surface.

160. (New) The process of claim 159 wherein the aqueous sol	ent and the catalyst
are provided in amounts that maintain a hydrolyzed precursor sol while	e avoiding gelation or
precipitation.	
precursor alkoxide or tetrachlorosilane and wherein the surfactant and silica are in a mole ratio that is above a lower mole ratio that produces phase and below an upper mole ratio that produces a lamellar phase.	the soluble source of
162. (New) The process of claim 159, wherein the ammonium further includes alkyl triethylammonium chloride or bromide surfacts	m cationic surfactant ants with different
chain lengths.  163. (New) The process of claim 159, further comprising the	e step of calcining said
film at 450°C.	
164. (New) The process of claim 159, wherein the precurso substrate by spin coating.	or sol is deposited on a
165. (New) The process of claim 159, wherein said soluble alkoxide silica precursor or tetrachlorosilane.	source of silica is an
166. (New) The process of claim 159, wherein the films ex	chibit an index of
167. (New) A process to form a mesoporous structure, con  (a) preparing a precursor sol containing a soluble  alcohol and water solvent, an ammonium cationic surfactant, and a  said solvent is provided in an amount resulting in complete hydroly	source of silica, and an acid catalyst, wherein you and said acid catalyst
is in an amount to maintain a hydrolyzed precursor and to avoid ge said precursor sol;	SISTION OF PRESIDENCE IN
(b) forming the precursor sol into a preform;	
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	(c) evaporating said solvent from the preform at a rat	e that forms a
	•	
mesostructur	ed material; and  (d) calcining the mesostructured material to form a m	iesoporous structure.
	(d) calcining the mesosuticulou has the	
168,	(New) The process of claim 167, wherein said precurs	or sol contains alcohol
which is a h	product of hydrolysis, and said mesoporous structure is a	<u>ı film.</u>
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169.	(New) The process of claim 167, wherein said preform	is a droplet, said
alaahal is al	byproduct of hydrolysis, and said sol is spray dried to for	m a powder.
alconor is a	<u> </u>	,
170.	(New) The process of claim 167, wherein said drying	is preformed in less
than 5 minu		
. 171	(New) The process of claim 167, wherein said precurso	or sol contains dilutant
-1-abel on	wherein the mesoporous structure is a film.	
alconol, and	wherein the tuesquest	
172	(New) The process of claim 167, wherein the mesopor	ous structure is a film
1/2.	n the film exhibits an index of refraction of between 1.16	and that of silica.
and wherei	if the name of the control of the co	•
173	(New) The process of claim 167, wherein the said p	recursor sol contains
<u></u>	ich is a byproduct of hydrolysis, and wherein said mesos	tructure is a film.
alconol wi	IICII IS & OYPACISON SE	
174	(New) The process of claim 173, wherein the film e	xhibits an index of
<u>174.</u>	of between 1.16 and that of silica.	
retraction	of perwedit 1.10 dies par	
175	(New) The process of claim 167, wherein said prefe	orm is a droplet, wherein
1/3,	ol is a byproduct of hydrolysis, and wherein said precurs	or sol is spray dried.
said alcon	of is a dyproduct of Aystery as	
176	. (New) The process of claim 167, wherein said evar	porating is performed in
<u> 176</u>		
less than	5 minutes.	
	(New) The process of claim 167, wherein said solu	ible source of silica
177	a silica alkoxide precursor or tetrachlorosilane.	,
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178. (New) A process to form a mesoporous structure, comprising:
(a) prenaring a precursor sol containing a soluble source of silica, an
an ammonium cationic surfactant, and an acid catalyst, wherein
is provided in an amount resulting in complete hydrolysis and said acid to the
mount to maintain a hydrolyzed precursor and to avoid gelation or precipitation in said
precursor sol:
(b) forming the precursor sol into a preform;
(c) evaporating said solvent from the preform at a rate that forms a
wherein said mesostructured material contains surfactant; and
(d) calcining the mesostructured material to form a mesoporous structure.
179. (New) A process to form a mesostructure, comprising:
(a) preparing a precursor sol containing a soluble source of silica, water
tales had ackient an ammonium cationic surfactant and an acid catalyst; and
(b) evaporating said solvent in less than 5 minutes to cause the formation of
a mesostructure, wherein said mesostructure contains surfactant.
180. (New) The process of claim 179, wherein the mesostructure is a film, and
wherein the film exhibits an index of refraction of between 1.16 and that of silica.
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181. (New) A process to form a mesostructure, comprising:
(a) preparing a precursor sol containing a soluble source of silica, a water
and clocked solvent, an ammonium cationic surfactant and an acid catalyst, and
(b) evaporating said solvent in less than 5 minutes to cause the formation of
a mesostructure.
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182. (New) The process of claim 181, wherein said solvent is evaporated in less
than 1 minute.
183. (New) The process of claim 181, wherein said solvent is evaporated in less
than 10 seconds.
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	184. (New) The process of claim 183, wherein the mesostructure is a film, and	
	wherein the film exhibits an index of refraction of between 1.16 and that of silica.	
	wherein the film exhibits an index of lengthon of between	
	185. (New) The process of claim 181, wherein the said precursor sol contains	
	both dilutant alcohol and alcohol which is a byproduct of hydrolysis, and wherein said	
	mesostructure is a film.	
1	186. (New) The process of claim 181, wherein said preform is a droplet, said	
J	alcohol is a byproduct of hydrolysis, and said sol is spray dried.	
	187. (New) The process of claim 181, wherein the ammonium cationic surfactant	
	further includes alkyl triethylammonium-chloride or bromide surfactants with different	
	chain lengths.	
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	188. (New) A calcined mesoporous silica film on a substrate formed by a process	ND
	comprising:	100,
	dispensing an acid catalyst- and silica precursor- and aqueous solvent- and	
	surfactant-containing solution on the substrate;	;
	forming a film on the substrate by rapid evaporation of the solution on the substrate;	. /
	heating the film on the substrate for a time and to a temperature sufficient	
	substantially to remove any residual solvent; and	
	calcining the film at a temperature at or above 350°C.	
	189. (New) A calcined mesoporous silica film on a substrate formed by a process	
	iging'	
	dispensing a catalyst- and silica precursor- and solvent- and surfactant-containing	
	. l' on the cubetrate'	
	forming a film on the substrate by rapid evaporation of the solution on the substrate;	
		/
	and  heating the film on the substrate for a time and to a temperature sufficient	. /
	substantially to remove any residual solvent; and	
	calcining the film at a temperature at or above 350°C.	
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